

WHAT IS CLAIMED IS:

- 1                    1.        A method for identifying a compound that modulates taste  
2 signaling in taste cells, the method comprising the steps of:  
3                    (i) contacting the compound with a eukaryotic host cell or cell  
4 membrane which expresses a taste cell-specific ion channel subunit:  
5                    (a) having greater than about 70% amino acid sequence  
6 identity to a polypeptide having a sequence selected from the group that consists of SEQ  
7 ID NO: 2, SEQ ID NO: 5, and SEQ ID NO: 8; and  
8                    (b) specifically binding to polyclonal antibodies that  
9 specifically bind to a polypeptide having a sequence selected from the group that consists  
10 of SEQ ID NO: 2, SEQ ID NO: 5, and SEQ ID NO: 8; and  
11                    (ii) determining a functional effect of the compound upon a  
12 transmembrane ion flux of a predetermined ion, thereby identifying a compound that  
13 modulates taste signaling in taste cells.
- 1                    2.        The method of claim 1, wherein the functional effect is determined  
2 by measuring changes in intracellular ion concentration.
- 1                    3.        The method of claim 1, wherein the functional effect is determined  
2 by measuring changes in intracellular  $\text{Ca}^{++}$ .
- 1                    4.        The method of claim 1, wherein the changes in ion flux are  
2 measured by an assay selected from the group consisting of a voltage clamp assay, a  
3 patch clamp assay, a radiolabeled ion flux assay, or a fluorescence assay using ion  
4 sensitive dyes.
- 1                    5.        The method of claim 1, wherein the cell or cell membrane is  
2 attached to a solid substrate.
- 1                    6.        The method of claim 1, wherein the taste cell-specific ion channel  
2 subunit is from a mammal.

1                   7.     The method of claim 6, wherein the taste cell-specific ion channel  
2 subunit has an amino acid sequence selected from the group that consists of SEQ ID NO:  
3 2, SEQ ID NO: 5, and SEQ ID NO: 8.

1                   8.     The method of claim 1, wherein the host cell is a human cell.

1                   9.     The method of claim 1, wherein the host cell is a HEK 293 cell.

1                   10.    A method for identifying a compound that binds to a taste cell-  
2 specific ion channel subunit, said method comprising:

3                   (i) contacting control cells that do not express a taste cell-specific ion  
4 channel subunit with a test compound;

5                   (ii) contacting test cells with said test compound, wherein said test cells  
6 are transformed with and express a nucleic acid encoding a taste cell-specific ion channel  
7 subunit

8                   (a) having greater than about 70% amino acid sequence identity to  
9 to a polypeptide having a sequence selected from the group that consists of SEQ ID NO:  
10 2, SEQ ID NO: 5, and SEQ ID NO: 8; and

11                   (b) specifically binding to polyclonal antibodies that specifically  
12 bind to a polypeptide having a sequence selected from the group that consists of SEQ ID  
13 NO: 2, SEQ ID NO: 5, and SEQ ID NO: 8; and;

14                   (iii) identifying test compounds that bind to said taste cell-specific ion  
15 channel subunit by comparing the amount of said test compound that binds to said test  
16 cells to the amount of said test compound that binds to said control cells.

1                   11.    A method according to claim 10 wherein said nucleic acid encodes  
2 an amino acid selected from the group that consists of SEQ ID NO: 2, SEQ ID NO: 5, and  
3 SEQ ID NO: 8.

1                   12.    A method of modulating taste signaling in taste cells of an  
2 individual, comprising

3                   administering to an individual a pharmacologically effective amount of a  
4 composition that modulates taste signalling by an ion channel subunit

5                   (a) having greater than about 70% amino acid sequence identity to  
6 to a polypeptide having a sequence selected from the group that consists of SEQ ID NO:  
7 2, SEQ ID NO: 5, and SEQ ID NO: 8; and

8 (b) specifically binding to polyclonal antibodies that specifically  
9 bind to a polypeptide having a sequence selected from the group that consists of SEQ ID  
10 NO: 2, SEQ ID NO: 5, and SEQ ID NO: 8;

1                   13.     A method of claim 12, wherein said ion channel subunit has an  
2     amino acid sequence selected from the group that consists of SEQ ID NO: 2, SEQ ID  
3     NO: 5, and SEQ ID NO: 8.

1            14.    A method of claim 12, wherein said individual is a mammal.

1            15.    A method of claim 12, wherein said individual is a human.